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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/994,421

11/27/2001

Kamel Benaissa

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06/20/2005

TEXAS INSTRUMENTS INCORPORATED

P O BOX 655474, M/S 3999

DALLAS, TX 75265

EXAMINER

DIAZ, JOSE R

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 06/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EL

Office Action Summary	Application No. 09/994,421	Applicant(s) BENAISSA ET AL.	
	Examiner José R. Díaz	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 and 15-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-14 and 19-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 31, 2005 has been entered.

Claim Objections

2. Claims 1 and 19 are objected to because of the following informalities:
- a. Claim 1, line 10: the phrase "on a first conductivity type" should be changed to -- of the first conductivity type --
 - b. Claim 1, lines 15 and 17: the phrase "said contact isolation region" should be changed to -- said contact isolation structure --
 - c. Claim 19, line 6: the phrase "on a first conductivity type" should be changed to -- of the first conductivity type --

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding claim 14, it is not clear what is a well contact region. Does the "well contact region" mean the same as "contact region", as recited in line 10 of claim 11? Is the "well contact region" a different region in addition to the contact region? Clarification of required.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 11-14 and 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (US Pat. No. 6,316,805 B1) in view of Hsu et al. (US Pat. No. 5,910,673).

Regarding claims 11 and 19, Lin et al. teaches a method comprising the steps of:
providing a semiconductor substrate (310) with at least a first and a second isolation regions (313) separated by a first distance (see fig. 8);

forming a well region (320) of a first conductivity type (N-type) in said semiconductor substrate (310) between said first and second isolation regions (313) (see fig. 8);

forming at least a first and second active regions in said well region (320) by forming a contact isolation structure (312) in said well region (320) between said first and second isolation regions (see fig. 8) ¹;

forming contact regions (314) of the first conductivity type (N-type) in said first and second active regions (see fig. 8);

forming a gate dielectric layer (316) on said first active region and said second active region (see fig. 8); and

forming a gate layer (317) on said gate dielectric layer wherein said gate layer overlies said first and second active regions, and said contact isolation structure (312) (see fig. 8).

¹ It is noted that figure 8 shows a well region (320) formed only on one of the two active regions. However, Lin et al. further teaches that the formation of the well region is not limited to only one preferred location [see col. 5, lines 1-4]. For instance, column 5, lines 17-22 teaches an embodiment in which the well region is located in both active regions, e.g. below the STI structure, the gate oxide layer, and below a contact region, wherein the contact region is formed on the **two sides** of the STI structure. Please note

However, Lin et al. fails to teach the step of forming electrical contacts to said gate conductive layer wherein said electrical contacts are formed over said contact isolation region.

Hsu et al. teaches the step of forming electrical contacts (72) to a gate conductive layer (44), wherein said electrical contacts (72) are formed over a contact isolation structure (34) (fig. 10).

Lin et al. and Hsu et al. are analogous art because they are from the same field of endeavor as applicant's invention. At the time of the invention it would have been obvious to a person of ordinary skill in the art to include the step of forming electrical contacts to a gate conductive layer, wherein said electrical contacts are formed over a contact isolation structure. The motivation for doing so, as is taught by Hsu et al., is electrically connecting active regions to interface with other metal levels subsequently fabricated (col. 5, lines 10-13). Therefore, it would have been obvious to combine Hsu et al. with Lin et al. to obtain the invention of claims 11-14 and 19-22.

Regarding claims 12-13, Lin et al. teaches that the first and second isolation region (313) and the contact isolation structure comprises STI structures (312) [col. 4, lines 4].

Regarding claim 14, Lin et al. teaches forming well contact regions (315) adjacent to said first and second isolation regions (313) (see fig. 8).²

that the recited STI structure is similar to the isolation structure 312 shown in figure 8, which defines the first and second active regions.

² In this rejection, the examiner interprets the term "well contact regions" as additional doped regions as regions (315).

Regarding claim 20, Lin et al. teaches the step of forming sidewall structures (319) adjacent to said gate layer (317) (see fig. 8).

Regarding claim 21, Lin et al. teaches that said well region (320) is n-type (see col. 3, line 66).

Regarding claim 22, Official Notice is taken with respect to the limitation of forming the p-type well region since it is very well known in the art to interchange the conductivity types (i.e. n for p) to form a multiplicity of different structure.

Response to Arguments

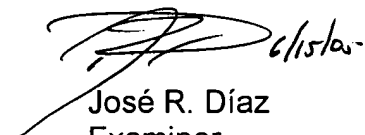
9. Applicant's arguments with respect to claims 11-14 and 19-22 have been considered but are moot in view of the new grounds of rejection.

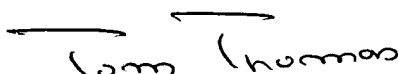
Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to José R. Díaz whose telephone number is (571) 272-1727. The examiner can normally be reached on Monday through Thursday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (571) 272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2815

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


José R. Díaz
Examiner
Art Unit 2815


TOM THOMAS
SUPERVISORY PATENT EXAMINER